

## REMARKS

Claims 8-16, 18-21, 23, 26, 29-34, 38, 40-41, 45-46 and 49-54 are pending in the present application. By this Amendment, claims 17, 42-44 and 47-48 are cancelled; claims 13-14, 20-21, 23, 29, 31-32, 38 and 46 are amended; and new claims 49-54 are added. Applicants respectfully request reconsideration of the present claims in view of the foregoing amendment and the following remarks.

### I. Formal Matters:

#### Rejection of Claims 8-21, 23, 26 and 29-34 Under 35 U.S.C. §112, Second Paragraph

Claims 8-21, 23, 26 and 29-34 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for allegedly failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This rejection is respectfully traversed.

Examiner Pratt states on page 2, lines 15-21 of the Office Action:

Claim 34 is indefinite because it confuses the scope of the claimed subject matter. Claim 34 now utilizes the partially closed transitional language "consisting essentially of." This language excludes the presence of materials, which affect the basic and novel characteristics of the invention. Here, it is not clear what applicant considers the basic and novel characteristics of the invention. Claim 34 is drawn to a web of poly(vinyl alcohol) fibers, yet claims depending therefrom add additional elements such as impermeable layers (claims 18-19) and coating (claims 20-21).

Applicants have amended the claims in an attempt to make it clear that the claimed invention encompasses at least the following embodiments: (1) a single spun-laced web or fabric layer consisting essentially of poly(vinyl alcohol) fibers, (2) a spun-laced web or fabric layer consisting essentially of poly(vinyl alcohol) fibers in combination with one or more additional layers, such as an impermeable layer, (3) a coated web consisting essentially a spun-laced web or fabric layer consisting essentially of poly(vinyl alcohol) fibers in combination with one or more coating materials either on or in the web or fabric layer consisting essentially of poly(vinyl alcohol) fibers, and (4) articles comprising at least one of

(1) to (3). For example, claims 8-16, 26, 34, 38, 45, and 49-52 are directed to a spun-laced web layer consisting essentially of poly(vinyl alcohol) fibers. Claims 18-19, 29 and 40-41 are directed to an article comprising, *inter alia*, (i) a spun-laced web layer consisting essentially of poly(vinyl alcohol) fibers, and (ii) an substantially impermeable layer adhered to the web layer. In the embodiment of claims 18-19, 29 and 40-41, the article still contains a spun-laced web layer consisting essentially of poly(vinyl alcohol) fibers even though an additional layer is adhered to the spun-laced web layer.

In claims 30-31 and 33, the claimed article comprises a spun-laced web layer consisting essentially of poly(vinyl alcohol) fibers (as recited in claim 34), and is configured into a specific article, such as an absorbent pad, an air filter or gauze, and may comprise a single spun-laced web layer consisting essentially of poly(vinyl alcohol) fibers or a spun-laced web layer consisting essentially of poly(vinyl alcohol) fibers in combination with other layers.

Claims 20-21, 23, 32, 46 and 53-54 are directed to coated webs consisting essentially of (i) a spun-laced fabric layer consisting essentially of poly(vinyl alcohol) fibers and (ii) a coating material on or in the spun-laced fabric layer.

Applicants have attempted to cover both single-layer articles and multilayer articles, wherein at least one layer in the article is a layer consisting essentially of spun-laced poly(vinyl alcohol) fibers. If further discussion is needed to discuss this matter, Applicants respectfully request a telephone interview with Examiner Pratt to further clarify the claim language if necessary.

For at least the reasons given above, Applicants respectfully submits that the present claims, including claims 8-16, 18-21, 23, 26 and 29-34 (claim 17 was cancelled), meet the definiteness requirements of 35 U.S.C. §112, second paragraph. Withdrawal of this rejection is respectfully requested.

**II. Prior Art Rejections:**

**Rejection of Claims 1-2, 5, 11-16, 18-20, 29-31, 34 and 37-39 Under 35 U.S.C.  
§103(a) in View of Honeycutt**

Claims 11-16, 26, 29-31, 33-34, 38 and 45-48 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,207,873 to Honeycutt (hereinafter "Honeycutt"). This rejection is respectfully traversed.

Applicants' claimed invention, embodied in independent claim 34, is directed to a spun-laced web consisting essentially of a plurality of pressure liquid entangled poly(vinyl alcohol) fibers, wherein (a) the web is nonwoven; (b) binding adhesives are substantially absent from the web; (c) heat fusion is substantially absent from the web; (d) needlepunching is substantially absent from the web; (e) stitchbonding is substantially absent from the web; (f) the poly(vinyl alcohol) has a degree of polymerization of from about 300 to about 5000; and (g) the web has a bursting strength value as measured according to ASTM D3786-87 of greater than 50 psi when the web has a thickness of 0.4 mm and a basis weight of 70 gsm.

Applicants' claimed invention, embodied in replacement claim 38, is directed to a spun-laced web consisting of a plurality of pressure liquid entangled poly(vinyl alcohol) fibers, wherein (a) the web is non-woven; (b) binding adhesives are absent from the web; (c) heat fusion is substantially absent from the web; (d) needlepunching is substantially absent from the web; (e) stitchbonding is substantially absent from the web; (f) the poly(vinyl alcohol) has a degree of polymerization of from about 300 to about 5000; (g) the web has a thickness of from about 0.05 mm to about 2.0 mm and a basis weight of from about 20 gsm to about 400 gsm; and (h) the web has a bursting strength value as measured according to ASTM D3786-87 of greater than 50 psi.

Applicants' claimed invention, embodied in new claim 46, is directed to a coated web consisting essentially of (I) a spun-laced nonwoven fabric consisting essentially of a plurality of pressure liquid entangled poly(vinyl alcohol) fibers, wherein (a) binding adhesives are substantially absent from the fabric; (b) heat fusion is substantially absent from the fabric; (c) needlepunching is substantially absent from the fabric; (d) stitchbonding is

substantially absent from the fabric; (e) the poly(vinyl alcohol) has a degree of polymerization of from about 300 to about 5000; and (f) the fabric has (i) a bursting strength value as measured according to ASTM D3786-87 of greater than 50 psi; (ii) a basis weight of about 40 g/m<sup>2</sup> to about 100 g/m<sup>2</sup> per 0.4 mm of thickness, and a thickness of from about 0.1 mm to about 1.0 mm; and (iii) an air permeability of greater than 150 CFM/sq. ft. when measured by ASTM D737-96; and (II) a coating on an outer surface or within the fabric, wherein the coating consisting essentially of a coating material selected from the group consisting of isopropyl alcohol, water, methyl ethyl ketone, methyl propyl ketone, acetone, a solvent, a mixture of fluorocarbon and wax, and a combination thereof.

As noted in Applicants' January 13, 2003 RCE Request and Amendment (paper no. 23), the teaching of Honeycutt fails to teach or suggest spun-laced webs or coated webs containing a spun-laced fabric as recited in Applicants' independent claims 34, 38 and 46. Although the teaching of Honeycutt discloses generally nonwoven webs comprising poly(vinyl alcohol) fibers, the teaching of Honeycutt does not suggest to one of ordinary skill in the art the claimed webs or fabrics embodied by Applicants' independent claims 34, 38 and 46.

In particular, the teaching of Honeycutt specifically fails to teach or suggest the following claim features recited in independent claims 34, 38 and 46:

- (1) a spun-laced web or fabric consisting essentially of a plurality of pressure liquid entangled poly(vinyl alcohol) fibers (claims 34, 38 and 46);
- (2) a spun-laced web consisting essentially of a plurality of pressure liquid entangled poly(vinyl alcohol) fibers and having the following properties: (a) the web is nonwoven; (b) binding adhesives are substantially absent from the web; (c) heat fusion is substantially absent from the web; (d) needlepunching is substantially absent from the web; (e) stitchbonding is substantially absent from the web; (f) the poly(vinyl alcohol) has a degree of polymerization of from about 300 to about 5000; and (g) the web has a bursting strength value as measured according to ASTM D3786-87 of greater than 50 psi when the web has a thickness of 0.4 mm and a basis weight of 70 gsm (claim 34);

(3) a spun-laced web consisting of a plurality of pressure liquid entangled poly(vinyl alcohol) fibers and having the following properties: (a) the web is non-woven; (b) binding adhesives are absent from the web; (c) heat fusion is substantially absent from the web; (d) needlepunching is substantially absent from the web; (e) stitchbonding is substantially absent from the web; (f) the poly(vinyl alcohol) has a degree of polymerization of from about 300 to about 5000; (g) the web has a thickness of from about 0.05 mm to about 2.0 mm and a basis weight of from about 20 gsm to about 400 gsm; and (h) the web has a bursting strength value as measured according to ASTM D3786-87 of greater than 50 psi (claim 38);

(4) a coated web consisting essentially of (I) a spun-laced nonwoven fabric consisting essentially of a plurality of pressure liquid entangled poly(vinyl alcohol) fibers, and (II) a coating on an outer surface or within the fabric, wherein the coating consisting essentially of a coating material selected from the group consisting of isopropyl alcohol, water, methyl ethyl ketone, methyl propyl ketone, acetone, a solvent, a mixture of fluorocarbon and wax, and a combination thereof (claim 46); and

(5) a coated web, wherein the spun-laced nonwoven fabric consisting essentially of a plurality of pressure liquid entangled poly(vinyl alcohol) fibers of the coated web has the following properties: (a) binding adhesives are substantially absent from the fabric; (b) heat fusion is substantially absent from the fabric; (c) needlepunching is substantially absent from the fabric; (d) stitchbonding is substantially absent from the fabric; (e) the poly(vinyl alcohol) has a degree of polymerization of from about 300 to about 5000; and (f) the fabric has (i) a bursting strength value as measured according to ASTM D3786-87 of greater than 50 psi; (ii) a basis weight of about 40 g/m<sup>2</sup> to about 100 g/m<sup>2</sup> per 0.4 mm of thickness, and a thickness of from about 0.1 mm to about 1.0 mm; and (iii) an air permeability of greater than 150 CFM/sq. ft. when measured by ASTM D737-96 (claim 46).

Examiner Pratt maintains that the teaching of Honeycutt makes obvious Applicants' claimed invention as embodied in independent claims 34, 38 and 46. Applicants disagree. As noted in Applicants' January 13, 2003 RCE Request and Amendment (paper no.

23), the teaching of Honeycutt fails to disclose or suggest a spun-lace process or a spun-laced fabric resulting from a spun-lace process. As described in the specification, a typical spun-lace process comprises at least the following steps: a carding process to form one or more sheets of fibers, a "stacking" process" wherein two or more sheets of the carded fibers are stacked on one another, and an entangling process wherein the stack of carded fiber layers are subjected to an entangling process, such as a hydroentangling process. The teaching of Honeycutt fails to disclose or suggest a spun-lace process.

Further, the teaching of Honeycutt fails to disclose or suggest spun-laced webs or fabrics consisting essentially of poly(vinyl alcohol) fibers, wherein the resulting webs or fabrics have superior properties including a bursting strength over 50 psi, even for a web or fabric having an air permeability of greater than 150 CFM/sq. ft.

To further support the nonobviousness of Applicants' claimed invention, Applicants submit herewith a Declaration under 37 CFR §1.132 providing evidence of unexpected results. As discussed in the Declaration under 37 CFR §1.132, Dr. Baosheng Lee, one of the inventors of the present invention, did not expect the claimed spun-laced webs and fabrics to have a bursting strength so much greater than the bursting strengths of comparable fabrics known in the art, such as spun-laced fabrics sold by Johnson & Johnson and Maxim Medical.

Applicants also submit herewith a Declaration under 37 CFR §1.132 providing evidence of commercial success. As shown in the Declaration, the company has had remarkable success over the past 3.5 years with sales of the claimed spun-laced webs and fabrics in the nuclear industry. Sales have increased significantly over the past 3.5 years, and are expected to continue to rise due to the superior characteristics of the claimed product. Sales have increased from about \$79,000 in 2000 to about \$1,719,000 in just the first five months of 2003. Projected sales over the first six months of 2003 were about \$920,000. Actual sales over the first five months of 2003 were about \$1,719,000. Total sales for the claimed spunlaced webs and fabrics during 2003 are projected to be close to \$5,000,000. Forecasted sales for the claimed spunlaced webs and fabrics over the upcoming three years

are: sales of \$6,000,000 to \$8,000,000 in 2004; sales of \$10,000,000 in 2005; and sales of \$12,000,000 in 2006.

For at least the reasons given above, Applicants respectfully submit that the teaching of Honeycutt cannot make obvious Applicants' claimed invention embodied in independent claims 34, 38 and 46. Since claims 11-16, 26, 29-31, 33 and 45 depend from independent claims 34, 38 and 46 (claims 47-48 have been cancelled), and recite additional claim features, the teaching of Honeycutt cannot make obvious dependent claims 11-16, 26, 29-31, 33 and 45. Accordingly, withdrawal of the rejection of claims 11-16, 26, 29-31, 33-34, 38 and 45-46 (claims 47-48 have been cancelled) under 35 U.S.C. §103(a) as being unpatentable over Honeycutt is respectfully requested.

Rejection of Claims 8-10 Under 35 U.S.C. §103(a) in View of Honeycutt In Combination With Honeycutt'907

Claims 8-10 are rejected under 35 U.S.C. §103(a) as being unpatentable over Honeycutt in combination with U.S. Patent No. 5,885,907 to Honeycutt et al. (hereinafter "Honeycutt'907"). This rejection is respectfully traversed.

Applicants respectfully submit that claims 8-10, which depend from independent claim 34, are patentable over Honeycutt in combination with Honeycutt'907 for at least the reasons given above. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection of Claim 17 Under 35 U.S.C. §103(a) in View of Honeycutt In Combination With Yamamura

Claim 17 is rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,882,780 to Yamamura et al. (hereinafter "Yamamura"). This rejection is moot given that claim 17 has been cancelled.

Rejection of Claims 18-19, 21-22, 40-41 and 43-44 Under 35 U.S.C. §103(a) in View of Honeycutt In Combination With Chen

Claims 18-19, 21-22, 40-41 and 43-44 are rejected under 35 U.S.C. §103(a) as being unpatentable over both Honeycutt in combination with U.S. Patent No. 5,990,377 to Chen et al. (hereinafter “Chen”). This rejection is respectfully traversed.

Applicants respectfully submit that claims 18-19, 21 and 40-41 (claims 22 and 43-44 have been cancelled), which depend from independent claims 34, 38 and 46, are patentable over Honeycutt in combination with Chen for at least the reasons given above. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection of Claims 20, 32 and 42 Under 35 U.S.C. §103(a) in View of Honeycutt In Combination With Abe

Claims 20, 32 and 42 are rejected under 35 U.S.C. §103(a) as being unpatentable over both Honeycutt in combination with U.S. Patent No. 5,658,915 to Abe et al. (hereinafter “Abe”). This rejection is respectfully traversed.

Applicants respectfully submit that claims 20 and 32 (claim 42 has been cancelled), which depend from independent claim 46, are patentable over Honeycutt in combination with Abe for at least the reasons given above. Accordingly, withdrawal of this rejection is respectfully requested.

III. New Claims 49-54:

New claims 49-54 depend from independent claims 34, 38 and 46, and recite additional claim features. Applicants respectfully submit that new claims 49-54 are patentable over the art of record for at least the reasons given above.

IV. Conclusion:

Applicants submit that claims 8-16, 18-21, 23, 26, 29-34, 38, 40-41, 45-46 and 49-54 define patentable subject matter. Accordingly, Applicants respectfully request

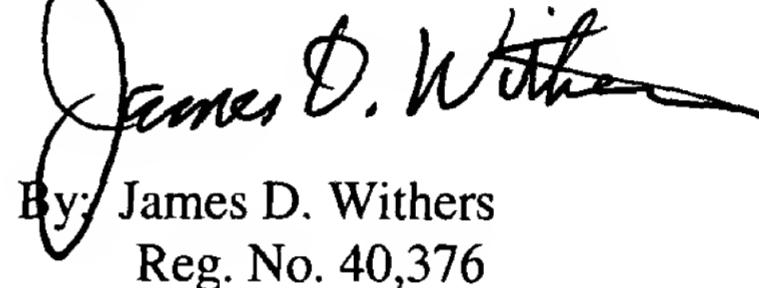
allowance of these claims.

Should the Examiner believe that anything further is necessary to place the application in better condition for allowance, the Examiner is respectfully requested to contact Applicants' representative at the telephone number listed below.

No additional fees are believed due; however, the Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, to Deposit Account No. 13-2725.

Respectfully submitted,

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